



Acquisition Reform



***** Update *****

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Modeling and Simulation

What is this stuff ...
and why is it important?

by Mike Roberts

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Constructive. Live. Virtual. STOW-E. Campaign Analysis. War Games. Simulation Based Design. Training Simulators. Physics Based Models. Virtual Prototypes. Synthetic Environments ... and on ... and on ... and on. What does it all mean? How do these things relate?

At the gut level a model is an abstraction of some other original object used to investigate or represent the properties of the original. The physical form of a model may be embodied in wood, metal or even plastic when used to investigate the dimensions of the original. A wooden 3-D model of a ship's bulkhead is useful in determining arrangement and layout, but is not useful in determining behavior to, say, the accelerations due to explosive shock. Why? Because a wooden model doesn't represent the actual behavior of a steel bulkhead. Does that mean a wooden model is a bad model? No. It means that for some purposes it is adequate and for other purposes inadequate. There are no good

models or bad models; there are useful models and not-so-useful models. Goodness is based on the purpose one is pursuing.

Wouldn't it be great if a model of our original entity embodied all the physical attributes and behavioral responses as the original ... and if it could be quickly changed to reflect modifications to the original (or to the design of the original) ... and the standard engineering tool set (structural, thermal, hydroacoustic, electromagnetic, etc. analysis) could be utilized to analyze the goodness of the model (and hence the original) in multiple domains? Behavior to the physical environment is important, but the behavior to changes in information is also important. For example, defense systems respond to information gleaned from their sensors and, when fused with other information, create a tactical picture. This tactical picture represents the basic system information set which is used by a decision maker to engage or not engage based on a complex calculus of rules of engagement, risk and mission objectives. That complex software logic path must be analyzed as well as the physics-based elements of platforms.

Modern computer technology allows us to create such a digital model which captures the physical attributes *and* the behavior of the original entity. Digital simulations allow digital models to execute their behavior over a prescribed time frame with varying degrees of resolutions. However, to date, each domain of interest has created *its own view* of the original entity, with *varying degrees of fidelity* which are not easily linked so that a composite view or composite analysis can be presented. Similarly, present simulations provide great insight and training opportunities but often fail to address the effects of the physical environment.

All this has resulted in a great proliferation of models and simulations. Many people cry out for "non-proliferation strategies" and "neck-down" strategies for the purpose of getting this stuff under control! Balderdash! We're missing the power of modeling and simulation. Do we really want to go through a witch hunt to find the best of the breed for every entity we might want to represent? I think not.

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After all, models give insight but don't give answers. Analysts and decision makers give answers. We've got to think inclusively in our approach to embracing these tools. We need to find mechanisms that allow our program managers and decision makers broad access to models and provide them tools to determine the goodness of each based on the purpose at hand.

Models and simulations have no meaning in and of themselves. They are only useful if they can help managers make good decisions. They are representations of things of interest in the real world. From an acquisition managers point of view, this interest can be expressed as a growing level of required detail and fidelity from warfare area assessment through concept development, engineering and manufacturing development, production, and finally through operations and support and disposal. The models and simulations for each phase of the acquisition cycle need to build on the previous phase, adding detail, fidelity and resolution.

In fact, the real power of modeling and simulation lies in the innate capability of a picture to say a thousand words. 3-D interactive models will replace the thousand-page flat file specification. Characteristics and attributes will be captured in interactive digital form along with a digital representation of the operational and physical environment in which these systems will be used. This interactive digital representation will allow everyone in the design and development team to analyze and critique the representation over multidomain interests and considerations. The Integrated Product Process Development team will be operating on a different view of the same product design and its development and manufacturing process design in real time, using exactly the same information set that has been rigorously configuration controlled.

When you really want to empower someone, you tell them what you want and why you want it and allow them to easily question these high-level needs as trade offs are being decided. This technology provides exactly that capability ... to allow all members of the team to see the composite picture and apply their best talents to determining how to make these desires actual. Modeling and simulation is not the purview of scientists and engineers. *Anyone who owns or operates a process can derive benefit from applying it to their domain.*

SPCC Team Develops COTS/NDI Handbook

The Non-Developmental Item (NDI) Acquisition Process Team at the Ships Parts Control Center (SPCC), Mechanicsburg, PA, has developed a supply support handbook for commercial-off-the-shelf/non-developmental items (COTS/NDI). This handbook serves as a guide for supply support methods to use when procuring items in the commercial market. The scope of this handbook centers around policies and

procedures to support NDI equipment acquired as COTS; however, these policies and procedures can also be applied to other NDI such as government, ruggedized and militarized off-the-shelf equipment.

COTS spares acquisition represents a cost effective approach to meeting requirements for major NDI systems and associated support items, items of supply and other goods and services. This handbook is intended to enhance and expand the DON's role as a commercial customer and take advantage of the existing commercial distribution structure, thereby reducing our usage of and dependence on military specifications and standards.

To obtain a copy of the Supply Support Handbook for Non-Developmental Items, contact: John Stokes, SPCC Code 0573, at (717) 790-6843, DSN 430-6843 or INTERNET ID john_stokes@fmso.navy.mil
NDI Procurement Lessons Learned

SPAWAR Approach Saves Time and Money

SPAWAR used an innovative approach when buying the new High Frequency Radio Group (HFRG)* for the Fleet that saved both time and money. First, SPAWAR gave industry a chance to comment on the draft RFP - so the Navy got the benefit of industry's suggestions and industry got a heads up. Then, to ensure that an NDI approach would receive first consideration, SPAWAR asked the bidders to demonstrate their system as part of their proposal package. SPAWAR also gave the offerors the flexibility to deviate from the specification as long as the impact of proposed change was advantageous to the government. The result? Three ships (CVN 74, CG 47 and LHA 2) are already on their way to having a brand new, state-of-the-art communication system - - and more will follow. Further, on the ships being backfitted with HFRG (as are the LHA 2 and CG 47), the new system will fit into the spaces vacated by the system it replaces. (*HFRG is a communication system that interfaces with other shipboard equipment to support uninterrupted continuous wave, voice and digital communications services as well as tactical and long-haul ship-to-ship, ship-to-submarine, ship-to-aircraft and ship-to-shore communication.)

For more information on HFRG or advice on NDI procurements call Tim McManus, SPAWAR PMW 152, at (703)602-8336.

NAVAIR Working Joint Navy-AF NDI Procurement

NAVAIR 's PMA 209 is working on a joint Navy-Air Force NDI procurement for a Ground Proximity

Warning System (GPWS) for Navy and Air Force aircraft. GPWS, installed on all commercial aircraft, warns the pilot of a potential crash based on inputs such as aircraft speed, altitude, navigation and position of landing gear. Seven to twelve U.S. military aircraft are lost each year because the aircraft flew into the ground.

NAVAIR offered the following recommendations and lessons learned for NDI procurements:

1. *Be aware of contract "standard language."* One production line was used to produce both the Navy/Air Force GPWS system for the Navy/Air Force and the commercial GPWS systems. "Standard" Navy/Air Force contracts contain a clause which gives the onsite government inspector the authority to shut down the production line if the product does not meet the acceptance criteria. In this case, stopping the government production line also closes the commercial line. A waiver eliminated the onsite government inspector's right to shut down the production line.

2. *Be aware of commercial industry requirements.* One thing all aircraft have in common -- they all fly and they can all crash. Federal Aviation Administration (FAA) requirements for commercial aircraft safety were evaluated for applicability to military aircraft and an FAA Technical Order which specifies the commercial GPWS requirements was used for the system.

3. *Conduct preproposal and/or pre-award testing.* Recommend the bidders submit hardware with their proposal so that the equipment can be tested for unique military requirements and checked for interfaces with existing systems. No such testing was done for the GPWS system. Due to the age of some of the Navy and Air Force aircraft, software changes were necessary to account for the older systems (some systems still had vacuum tubes) on the aircraft. The software was desensitized for the older equipment to eliminate false alarms. Had the testing been done up front, the software would have worked properly with all military aircraft from the start.

4. *Hold bidder's conference prior to release of the final RFP* to reduce potential problems, questions, or concerns.

5. *Be Flexible.* For the GPWS source selection, there was a hard deadline and when more time was needed, this time was not available and several issues were poorly handled or unresolved.

6. *If possible, do it jointly to save time and money.* The Contracts Data Requirements List (CDRL) and testing package were from previous Air Force procurement packages.

7. *Change philosophy on logistics.* Sometimes a replace vs repair philosophy for NDI equipment is more cost effective.

8. *Warranty.* A long-term warranty may mean that data rights are unnecessary.

9. *Remember industry is the customer* for the RFP, so prepare it that way.

For further discussion, call Don Wellman or Dick

Myers, NAVAIR PMA 209, 602-2500.

Automated Tools for Program Managers

(Part 5) Many Standards Improvement Program actions will be documented through the Acquisition Streamlining and Standardization Information SysTems (ASSIST) database. Eventually, many of the actions themselves will be handled electronically through the Acquisition Streamlining and Standardization Electronic Transfer Systems (ASSETS). What are these systems and how can you use them?

ASSIST will enhance the preparation, maintenance and management of standardization documents; support acquisition through improved visibility over documents involved in the process; and provide access to vital management information across the entire body of standardization documents. The ASSIST database integrates document data with references (Expanded DODISS), project tracking data (SD-4), Defense Management Review data, and point-of-contact and Federal Supply Classification data.

The Defense Printing Service Detachment Office (DPSDO) is responsible for maintaining ASSIST and for entering data into the system from paper inputs. ASSETS will provide for the electronic transmission of data to the database.

Access to the ASSIST database is through workstations installed at Naval Sea Systems Command; Naval Surface Warfare Center, Indian Head; Naval Air Warfare Center, Lakehurst; Naval Construction Battalion Center, Port Hueneme; and Defense Electronics Supply Center, Dayton. Acquisition managers outside these commands can install a local satellite workstation, or gain access to the ASSIST database through modem connection to DPSDO or to any of the above commands.

For further information contact Mr. Ray Bowser at DPSDO on (215)697-6257 or DSN 442-6257.

SPECS & STANDARDS Straight-Talk from the DEPSO

The Best Manufacturing Practices Network (BMPNET) now contains a Special Interest Group (SIG) titled "Specs & Standards Improvements." SIG is a bulletin board for sharing lessons learned and other information related to implementing specifications and standards reform. The DoN Standards Improvement Program Plan is available on SIG and can be viewed or downloaded. The Specs and Standards Improvement SIG is another vehicle for sharing "good ideas" among acquisition workforce personnel and keeping up to date on the latest news in

Specs and Standards Reform. For more information on the BMPNET see either the September or October issues of the AR Update Newsletter, or call or "write" Brian Willoughby at (703) 538-7792, or on INTERNET the ID is brianw@navy.csc.com

The Navy Standards Improvement Executive recently approved MIL-STD-461, MIL-STD-462, and MIL-STD-498 as the first Department-wide waivers without any restrictions on their use for a maximum period of two years. These Department-wide waivers serve as the only justification needed when citing these military standards in solicitations. Just because a Department-wide waiver has been approved does not mean that the

document must be used in solicitations. We still need to cite in a solicitation only those documents, or tailored sections thereof, which are required to define the Government's needs. For further information contact the DON DEPSO, CDR Bob Petroka at (703) 602-2389 or INTERNET ID petroka-bob@hq.secnav.navy.mil

NCGR Develops Forum for Government-Industry Exchange

The Next Generation Computer Resources (NCGR) program held its first Acquisition and Supportability (ASIG) meeting last November. The ASIG provides a forum for government and industry to discuss issues such as open systems acquisition and support, the impacts of the DoD Specs and Standards Reform changes, etc. The first meeting had over sixty attendees. As the event adjourned, all attendees agreed that the ASIG was a valuable tool for mutually identifying and resolving common concerns and problems.

The next NCGR-ASIG meeting is scheduled for March 28, 1995 at the Days Inn Hotel in Crystal City, Virginia. For more information on the ASIG call Alex Lewin, SPAWAR, at (703) 602-1470. To attend the March ASIG Meeting call or write Jennifer Aruffo, BAH, at (703) 412-7711 or on INTERNET aruffoj@bah.com

This Is Your Newsletter

One of the strengths of the *Acquisition Reform Update* newsletter is in helping to translate the AR policy, procedures and ideas into real-world acquisition applications. YOU -- the members of the DoN acquisition workforce on the waterfront and in the trenches -- make that happen.

This newsletter is a way to share your success stories. If you've found a better way to improve the acquisition process, please let the Acquisition Reform Office (ARO) know so your experiences can be shared with others

facing similar problems.

Call or visit Alex Dean at (703)602-2849 or 602-2850, CP#5, room 536, Crystal City, VA.
Or send a FAX to (703)602-2117 or (E-Mail): dean-alex@hq.secnav.navy.mil